

are as follows:

Tubing Size	Wall	Cross Sec.	Length	Volume	Residence
<u>OD inches</u>	<u>inches</u>	<u>area sq. cm</u>	<u>feet</u>	<u>cc</u>	<u>time/min.</u>
0.625	0.045	1.449588	1550	68484.3	6.85
0.625	0.045	1.449588	950	41974.3	4.20

The ground level 1/4" FEP sampling line had a residence time of less than twenty seconds. Since the residence times for the two tower monitors are not within the twenty second time period recommended by EPA, line loss ozone studies were conducted near the beginning of the project, the middle and at the end of the project. To minimize line loss, the .625 inch sample lines were conditioned with 2 ppm of ozone for seven days at a flow rate of five Lpm prior to installation and start-up of the tower in 1993. The long sampling lines were inspected and vacuum checked prior to the start of sampling season. Teflon® inlet filters were used on the lines near the intake on the tower to prevent particulate matter from entering the sampling lines. These filters were also conditioned to minimize the potential ozone scavenging and changed on a regular basis after the line loss studies.

The line loss experiments were done on June 8, 1995 (Figure 3), August 17, 1995 (Figure 4) and October 3, 1995 (Figure 5). The line loss test was conducted by taking a certified calibrator to each level. The calibrator was warmed up for 30 minutes before any readings were taken. During each check a towel was draped over the calibrator to help retain the cell temperature due to windy conditions on the tower.

At each level, thirty (30) readings were taken from the calibrator while sampling ambient air. All values were corrected for zero off-set of the instruments. At the ground level, the thirty readings were recorded after waiting the calculated residence time to the nearest minute. The average results from the up-the-tower measurements from the calibrator were compared to the appropriate monitor average response to approximate the loss of ozone in the long sample lines. The line loss results are found in Appendices F, G, and H.